





**QUARTERLY NARRATIVE REPORT**

**PISHKUN  
WILLOW CREEK  
BENTON LAKE**

**FEBRUARY 1, 1940 TO APRIL 30, 1940**

**Submitted By**

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Refuge Manager**

1. WEATHER CONDITIONS

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF BIOLOGICAL SURVEY

A. February

Precipitation for February 1940 was all in the form of snowfall, amounting to .35 of an inch. Data taken from records kept in the County Extension Office in Choteau show that the highest amount of precipitation for February since 1920 was .74 inches in 1936, and the lowest, .02 inches in 1930 and 1931.

Temperatures ranged from a maximum of 51 to a minimum of -19. The highest recorded maximum temperature for February since 1920 was 69 degrees above in 1934 while the lowest was -50 in 1936. Snow covered the ground most of the month and lakes on all the refuges remained entirely frozen over. As a rule the wind blows enough in this section of the country to keep at least some open water in Willow Creek Reservoir, but as we had very little wind this winter, Willow Creek ice did not start to go out until the 8th. day of March. The breaking up of the ice on the main reservoir at Pishkun was several weeks later. At Benton Lake, snow covered the ground from 6 to 10 inches deep all through February.

B. March

During March 1940, precipitation in the form of both snow and rain amounted to .47 inches. Last year precipitation for March amounted to .11 inches, which is only .01 inch higher than the lowest recorded precipitation since 1920. The highest recorded precipitation since 1920 was 1.46 inches in 1936.

Temperatures ranged from a high of 64 to a low of 4 degrees above zero. In 1939 temperatures ranged from a high of 74 to a low of -12. The highest recorded temperature for March since 1920 was also the 74 of 1939, and the lowest was -36 in 1932.

Ice started going out at Willow Creek about March 8th., and as soon as open water appeared at the mouth of Willow Creek and along the shore of the lake, migratory waterfowl as well as wintering waterfowl from the Sun River and Teton River districts started flocking into the refuge. With the exception of the small lakes on the Easements, no open water appeared on the Pishkun Refuge until the very end of the month. On March 25th., 6 inches of snow covered the ground at Pishkun and Willow Creek.

C. April

April, 1940 has been one of the wettest ever recorded in this section of Montana. Weather records in Choteau, dating back as far as 1890 show only one year (1925) with more moisture in April than we have had this year. In 1925 there was 2.33 inches while this April we have had 2.16 inches.

Weather Conditions Cont.

UNITED STATES DEPARTMENT OF AGRICULTURE

Much of this moisture has been in the form of wet heavy snows. Frost had all gone out of the ground previously so there has been no run off of moisture. Cloudy weather prevailed almost the entire month, there being only a very few clear days. Precipitation in the form of rain or snow fell on 16 days during the month.

Temperatures for the month ranged from a high of 75 degrees above to a low of -12. The highest temperature recorded for April since 1920 was 84 in 1939, and the lowest was -16 in 1935.

The following chart shows comparisons of precipitation and temperatures for this quarter as compared for this period of other years since 1920.

Precipitation since 1920

	1940	1939	High Since 1920	Low Since 1920
Feb.	.35	.19	.74 (1936)	.02 (1931)
Mar.	.47	.11	1.46 (1930)	.10 (1931)
April	2.16	.41	2.33 (1925)	.05 (1937)

Temperature Readings Since 1920

	1940	1939	High Max.	Low Max.	Low Min.	High Min.
	Max. Min.	Max. Min.				
Feb.	57 -19	50 -41	69 (1934)	46 (1927)	-50 (1936)	14 (1931)
Mar.	64 4	74 -12	74 (1939)	52 (1932)	-13 (1932)	7 (1934)
April	75 -12	84 11	84 (1939)	65 (1929)	-16 (1935)	24 (1930)

The above figures on temperature readings represent the warmest and coldest days for this quarter, in 1939 and 1940, and also the warmest and coldest days recorded since 1920 for each of the three months in this quarter. It can be noted from the above charts that March and April, 1939 were exceptionally dry and hot, in fact the hottest days recorded since 1920 for March and April were in 1939.



11. WILDLIFE UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF BIOLOGICAL SURVEY

A. Waterfowl

Due to the fact that winter conditions prevailed during all of February and practically all waters remained frozen over, waterfowl populations remained the same as for January, there being only the winter residents on the refuges. Heavy concentrations of Mallards were noted however during the entire month of February on the open waters of the Teton and Sun Rivers. Although these streams do not enter any of the refuges, considerable assistance was extended to local sportsman's associations in investigating rumors of sickness and starvation of ducks, and also in supplying and putting out feed in these streams. Although the number of wintering ducks this year in this section was very high, investigations showed that the number of casualties was very low.

While investigating rumors of this kind in the Teton Valley on February 12, I noted that many Mallards were already paired up, 23 pairs being noted in a distance of 4 miles.

March 8th., was the first day noted for the beginning of the spring migration. The ice had begun to break up at the inlet of Willow Creek Reservoir on this day and 75 Mallards, 75 American Goldeneye, 1 Canada Goose, 1 Whistling Swan, and 1 Balpate was noted on the waters at the mouth of the creek. On March 11th. besides the above mentioned birds, 32 Canada Geese and 100 Pintail ducks arrived at Willow Creek. On March 14th. I estimated 4300 waterfowl on the refuge, of which 3500 were Pintails and 500 American Goldeneye. Canvasbacks and California Gulls had also arrived by this time. On March 23rd. I estimated approximately 43,000 waterfowl of 11 species on Willow Creek Refuge. Of the above number, approximately 35,000 were Pintails.



The above picture taken on March 25th. shows only a very small portion of a raft of ducks on one of the lakes at Willow Creek. Large deposits of Ruppia can be noted along the shore.

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**Waterfowl Cont.**  
BUREAU OF BIOLOGICAL SURVEY

On March 9th. while enroute to Fairfield, a great number of waterfowl was noted on the Davis Lake, which is a small lake on the north end of the Greenfields Lake. Upon driving down to the shore of this lake I was very much amazed to see so many waterfowl concentrated on such a small body of water. I estimated that there was not over 40 acres in the entire lake of which about half still remained frozen over, yet there were approximately 1,000 Whistling Swan, 1,500 Snow Geese and 30,000 ducks along the shore, in the water and on the ice. The ducks were chiefly Pintails but Mallards, American Goldeneyes, Canvasbacks, Redheads, and Buffleheads were also noted.

On March 19th. a flight of snow Geese passed over Pishkun, and although they did not stop I was very much interested in noting the size of the flight. Many flights such as this containing from 500 to Approximately 6,000 geese passed over with out stopping on any of the refuges, however large numbers of Snow Geese and also Canada Geese did stop at both Pishkun and Willow Creek and stayed on the refuges for several weeks. At Willow Creek Refuge one flock of Snow Geese numbering 28 have been on the refuge during the entire month of April.

The following pictures of Snow Geese were taken on the Easements at Pishkun on March 27th. Estimated waterfowl populations on Pishkun on March 27th. were 13,217, of which about 1,000 were Snow Geese and 10,000 Pintails.





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BUREAU OF BIOLOGICAL SURVEY  
**Waterfowl Cont.**



On March 22nd., 3,000 Pintails, 100 Mallards, 100 Canvasbacks, 50 American Goldeneye, 150 Whistling Swan, and 500 Snow Geese were observed on one of the small lakes in the Easements at Pishkun. This lake covers only about 4 acres. This is the first time waterfowl has been observed so thickly on any of the small lakes in the Easements. Sago Pond Weed and Prairie Bulrush was planted in many of the small lakes in 1939. Much of the waters in these lakes are quite shallow enabling Pintails, Mallards and other shoal water ducks to feed over much of the area of all of the lakes. Due to boggy and marsh conditions the area around many of the lakes have good food and nesting cover.

Heaviest concentrations of waterfowl at Willow Creek are always found on the small lake on the west end of the refuge. This lake contains an almost solid bed of Ruppia. Upon examination of this Ruppia I found that clinging to the plants was almost an unlimited supply of animal food such as fresh-water Snails, Beetles, Bugs, Nymphs and Crustaceans.

On March 27th., 10,000 Pintails were observed on the Easements at Pishkun. This estimate is fairly accurate as the ducks were scattered out over all of the 30 odd small lakes which made them easy to count. Many Pintails were observed feeding in the uncut meadows surrounding some of the lakes. While feeding in the meadows I noted that the males seemed to be on the watch for any sign of danger. From 25 to 50 male heads were sticking up out of the grass at all times. The females did not seem to pay any attention to anything other than finding something to eat. I also noted that all the males were each following or staying close by one female, indicating that mating had already taken place.

Although the peak of migration had passed during March and the first part of April on some species of waterfowl such as geese,



Waterfowl Cont.

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BUREAU OF FISH AND WILDLIFE

Pintails, Mallards and Goldeneyes, many other species such as Shovellers, Ruddy Ducks, Gadwals, Lesser Scaups, Grebes, Loons, Coots, and Shore Birds, made their first appearance on the refuges after the middle of April.

Counts on waterfowl show that approximately 4 times as many birds visited the refuges during the spring migration as did last year. The largest increase was noted in the number of Pintails, Balpates, Buffleheads, Grebes, Loons, and Avocets. A decrease was noted however in the number of Redheads. Many of the birds seem to be lingering much longer on the refuges this year and I believe due to better nesting conditions a much higher percent will nest in this area this year. Study of the migration tables included in the following pages of this report will show the number and the different species of waterfowl and shore birds using the refuges during this quarter.

In determining the number of birds on the lakes when in large rafts, or when numbers were too great for actual counting, the size of the raft in square yards was determined. In thickly condensed rafts one bird per square yard less one-third the total number of square yards for unoccupied open water was the method used. On the smaller lakes where birds were not too thickly condensed actual counts were made.

New Records

On March 27th., 8 European Widgeons were observed amongst a flock of Balpates in one of the small lakes in the Easements at Pishkun. As I was only about 50 yards from this flock of ducks and as the light conditions were very favorable, I could easily distinguish the European Widgeons from the Balpates. With the aid of an 8 power pair of field glasses the color markings of the head were distinctly shown. On two different observations last spring I thought I saw European Widgeons on Pishkun but as the distance was too far for accurate identification no report was made.

Although the Avocet is not a new bird for these refuges, a very large increase is noted this year over last year. Last year Avocets were noted only after the young birds were able to fly and were migrating southward. On April 25th., 1940, 100 Avocets were noted at Willow Creek and 9 at Pishkun.

Unusual Behavior

On April 19th., while patrolling and observing waterfowl at Willow Creek, I noted a male American Goldeneye in the creek, swimming around in circles. Upon approaching within about 15 feet of the duck, it immediately dove to the bottom. The water was only from 1 to 2 feet deep and clear so I could easily follow the duck in his travels below the surface of the water. He would stay under water for long intervals and when forced to come up for air he would only stick his head out and then immediately dive again.

TABLE 1

<u>Bird Counts</u>	<u>Willow Creek</u>			<u>March 1940</u>	
Species	Date 8	Date 14	Date 16	Date 23	Date 28
Mallards	75	150	150	1500	200
A. Goldeneye	75	500	500	2000	2000
Pintail		3500	20	35000	12000
Canvasback		40	10	1000	1500
Balpate	1		12	400	2500
Redhead				100	200
Bufflehead				25	20
A. Merganser			9		
Whistling Swan	1	50	13	200	30
Canada Geese	1	50		400	40
Snow Geese				1500	500
Calif. Gulls		3	3	10	25
Pintail Grouse	19	30	24		30
American Eagle	<u>        </u>	<u>1</u>	<u>3</u>	<u>        </u>	<u>        </u>
Total	172	4324	744	43325	19045

TABLE 2

Bird Counts		Pishkun		March 1940
Species	Date 16	Date 20	Date 22	Date 27
Mallard	30	75	400	250
A. Goldeneye	125	200	500	900
Lesser Scaup	20		50	
Pintail		100	3500	10000
Balpate		15	100	500
European Widgeon#				8
Canvasback			100	350
Redhead				75
Bufflehead			20	12
Whistling Swan	1	50	200	47
Canada Geese		50	50	50
Snow Geese		200	500	1000
Calif. Gulls				25
Hungarian Partridge			38	
Total	176	680	5458	13217

# European Widgeons were observed on Pishkun during the spring migration season of 1939 but as the distance from the observer to the ducks was too far for positive identification, no report was made of the observation. On March 27, 1940 a positive identification was made on 8 males of this species. Light conditions were good and the distance from the observer was only about 50 yards. This together with the aid of an 8 power pair of field glasses made it possible to easily see the color differences between the European Widgeons and the Balpates.



Table 3

Bird Counts ~~WISCONSIN~~ ~~DEPARTMENT OF AGRICULTURE~~ ~~WISCONSIN~~ April 1940

Species	BUREAU OF BIOLOGICAL SURVEY		
	Date 6	Date 18	Date 23
Mallard	1200	800	270
American Goldeneye	800	500	250
Lesser Scaup		60	300
Pintail	400	700	160
Baldpate	700	600	300
Canvasback	900	175	175
Redhead	300	50	30
Bufflehead	10	25	50
Shoveller		200	250
Ruddy Duck			200
Gadwall		40	325
American Merganser	10	100	400
Redbreasted Merganser		40	325
Unidentified Ducks			2000
Canada Geese		2	2
Snow Geese	300		
Whistling Swan	15	2	2
American Coot		600	2500
Horned Grebe			175
Western Grebe			6
Common Loon			30
California Gulls	60	50	50
Great Blue Heron			4
Avocets			10
Curlew		2	6
Killdeer			
	<u>1</u> 4,696	<u>2</u> 3,953	<u>6</u> 2,222

# Bird Counts

Table 4

Willow Creek

April 1940

Species	Date	Count	Date	Count
Mallard	4000	200	25	200
Lesser Scaup	500	300	200	500
Pintail	1200	500	600	50
Balpat	50	300	50	50
Canvasback	32	100	2500	500
Redhead	12	45	500	100
Bufflehead		2000	100	20
Shoveller		150	350	250
Ruddy Duck		60	60	28
Gadwall	100	10	28	5000
American Merganser	25	28	1500	500
Redbreasted Merganser	28	6	20	10
Snow Geese			10	100
American Coot			100	100
Horned Grebe			27	100
Eared Grebe			100	100
Western Grebe			25	8
Common Loon	100		6	2
California Gulls			4	
Avocets				
Curlew (Long Billed)		1		
Killdeer				
Willet (Western)			1	
Bairds Sandpiper			1200	
Greater Yellow			7,712	
San Goldeneye		900		
		7,749		

### Waterfowl Cont.

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF BIOLOGICAL SERVICES  
This kept on for about 15 or 20 minutes after which time the duck seemed to know that he wasn't going to be hurt and began resting on the surface of the water at the place where I first observed him. All this time I was not more than 8 feet distant. Thinking that this would make an excellent picture I walked back to the car for my camera and as quickly as possible returned to the place where the ~~the~~ duck was. He was still there and did not pay any attention to my approach and even watch me insert a film into the camera but as soon as I was ready to take the picture he bounded out of the water and flew clear to the lake about 1 mile away. At first I thought the ~~the~~ duck was sick or hurt although his swimming and flying was perfect.

#### Mating

Mating and copulation of Goldeneyes was noted at Willow Creek on March 8th. After copulation the male swam several times around the female, protruding him-self almost entirely out of the water and flapping his wings. He then made 7 or 8 quick dives first coming up on one side of the female and then the other. The male would have nothing to do with a second female that kept trying to come between him and the first female.

#### B. Upland Birds

Pintail Grouse were observed in the fenced in nesting area at Willow Creek all during this quarter. During this same period last year Pintail Grouse were observed only occasionally and then in very small numbers, 9 birds being the most seen at any time. This quarter up to 32 birds have been noted in one flock. Two shelters were constructed at Willow Creek last year and feeding stations were maintained in connection with them. During periods of deep snow this quarter, feeders had to be filled every week. Pintails were noted to be using the shelters on almost every visit to the refuge. On warm sunny days they could always be found taking advantage of the added shade provided by the shelters. It is believed that this entire flock of Pintail Grouse will nest on the refuge this year.



Pintail Grouse taking advantage of shade provided by bird shelter at Willow Creek.



Upland Birds Cont.

UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF WILDLIFE

On the Easements at Pishkun and Willow Creek about 40 Hungarian Partridges used the one shelter and feeding station all during the quarter. During periods of deep snow this feeder also had to be filled every week.

During the winter of 1938 and 1939 only 6 or 7 Hungarian Partridges were noted at Pishkun. Three broods were hatched during the summer of 1939 averaging about 16 birds to the brood. Of this number about 40 birds came through the winter and have spent their entire time on the refuge. I believe all of these birds will nest on the refuge this summer and a large increase should be noted after the hatching season.

Shelters maintained at Pishkun and Willow Creek are all constructed from brush, post and poles obtained in the vicinity of the refuges. Roofs on the shelters are constructed from brush and straw.

Heavy concentrations of Redpolls and Bohemian Waxwings were observed on both Pishkun and Willow Creek during this quarter. The following Pictures of the Bohemian Waxwing taken on the Madson Ranch in the Easements at Pishkun during February.



UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF BIOLOGICAL SURVEY  
C. PREDATOR CONTROL

Under permit from the Washington Office, traps were set in the fenced in inclosures around the bird shelters at Willow Creek and the following predators were taken.

February 26	--	One Weasel
March 25	--	One Skunk
April 6	--	One Skunk
April 19	--	One Weasel

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Developments

During the quarter one upland bird shelter was constructed from posts on hand on the refuge, poles obtained in Sun River Canyon, and brush obtained from the Swanson Ranch and on Sun River. Straw for the roof was also obtained from the Swanson Ranch. This shelter is located on the western end of the fenced in nesting area at Willow Creek. The size is 12 feet by 30 feet. The following picture of this shelter was taken on April 19.



Two additional nests for tree nesting ducks were constructed. These nests were made in accordance with dimensions supplied by the Regional office but old trees were sawed into blocks and hollowed out in substitution for lumber. During the quarter 11 nests were set out at Willow Creek. As many trees are not available in the refuge, trees were cut elsewhere and set in the refuge.



Refuge Development and Maintenance Cont.  
UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF BIOLOGICAL SURVEY



Nest box constructed by hollowing out dead cottonwood trees.



This box was constructed from old lumber and stained to blend in with the color of the tree.

#### 1. Maintenance

Refuge fences were maintained and kept in repair and stones hung on the posts in places where water is apt to flood the fence. Refuge sign posts were also reset where stock had rubbed them down.

As no ERA project has been in operation during the quarter, no work has been done in connection with the construction on the headquarters buildings, however approximately 10 yards of sand and gravel was hauled by the refuge manager for completion of the office and service building. A requisition for men for the re-opening of the project at Pishkun was submitted during the later part of April but at the present time it has not been learned whether or not the men can be supplied.



Refuge Development and Maintenance Cont.

B. Plantings

1 Aquatics

The 176 sacks of *Ruppia* that had been collected at Willow Creek last fall and stored dry in Choteau during the winter, was hauled to Pishkun and put to soak in two of the lakes, in preparation for planting this spring.

2 Trees

2,000 Caragana trees transferred from the Soil Conservation Service at Pullman Washington were taken to Pishkun and planted. 500 of these trees were planted around the headquarters buildings, 100 of which were planted to form a hedge on two sides of the house. 1,350 trees were planted in rows along the lower side of the canal running through the refuge and 150 trees were planted at Willow Creek. All trees arrived on the refuge in good condition and planting was started immediately. As no help was available for planting, a trench was dug and trees placed therein, covered with soil and kept moist until planting was finished. Six man days was required for planting.

IV. Public Relations

During National Wildlife Week, Newspaper articles were given to all the local publishers, and assistance was given the local Lyons and Sportsman's Clubs in obtaining speakers for meetings during National Wildlife Week. Two such meetings were held in Choteau.

On April 26 a public gathering sponsored by the Teton County Sportsman's Association was held in Choteau. The refuge manager was one of three on the program committee for this meeting. Mr. Mushbach and Mr. Cooney (State Game Manager) was asked to give a talk at this meeting and moving pictures of wildlife was shown by the men. About 70 people attended this meeting.